

Claims

[c1] 1. An aircraft comprising:

an airframe including an interior, a floor disposed within said interior, and a self-locating fastening member coupled to said airframe; and

a monument having a socket member sized for receiving said self-locating tie-down member so as to secure said monument in a predetermined position along at least one direction within said interior;

wherein said self-locating tie-down member includes a base portion and a top portion extending from said base portion, said base portion coupled to said floor and utilized for contacting said socket member and securing said monument in a predetermined position along at least one direction and also for guiding said self-locating tie-down member into said socket member, said top portion extending from said base portion and utilized for further securing said monument in said predetermined position;

wherein said socket member and said self-locating tie-down member comprise a self-locating fastening assembly.

- [c2] 2.The aircraft of claim 1 wherein said monument has a bottom surface for sliding across said top surface of said floor and inserting said self-locating tie-down member into said socket member.
- [c3] 3.The aircraft of claim 1 wherein said monument is selected from the group consisting of a galley, a lavatory, a closet, a purser work station, a video control center, and a crew rest station.
- [c4] 4.The aircraft of claim 1 wherein said socket member is disposed at an edge of said monument adjacent to said bottom surface of said monument.
- [c5] 5.The aircraft of claim 1 wherein said socket member is defined by said monument and is an integral part thereof.
- [c6] 6.The aircraft of claim 1 wherein said socket member is coupled to said monument.
- [c7] 7.The aircraft of claim 1 wherein said socket member defines a guiding chamber for contacting said top portion of said self-locating tie-down member and securing said self-locating tie-down member to said socket member.
- [c8] 8.The aircraft of claim 1 wherein said socket member

defines a base chamber for receiving and contacting said base portion of said self-locating tie-down member so as to secure said monument in said predetermined position.

- [c9] 9. The aircraft of claim 1 wherein said top portion comprises:
 - an offset tab extending from said base portion; and
 - a finger member extending from said offset tab and utilized for securing said self-locating tie-down member to said socket member.
- [c10] 10. The aircraft of claim 9 further comprising:
 - at least one fillet coupled between said base portion and said offset tab for strengthening said top portion.
- [c11] 11. The aircraft of claim 9 wherein said finger member has a central axis that is centered above a longitudinal axis of said base portion.
- [c12] 12. The aircraft of claim 1 wherein said base portion includes an inboard-extending tab sized for insertion into said socket member, guiding said self-locating tie-down member into said socket member, and securing said monument in said predetermined position.
- [c13] 13. The aircraft of claim 12 wherein said base portion further includes:

an outboard-extending tab for supporting said top portion in an inboard direction.

- [c14] 14. The aircraft of claim 13 further comprising:
 - a reinforcing rib coupled between said outboard-extending tab and said offset tab, said reinforcing rib for strengthening said top portion.
- [c15] 15. An aircraft comprising:
 - an airframe including an interior, a floor disposed within said interior, and a socket member coupled to said airframe; and
 - a monument including a self-locating tie-down member sized for insertion into said socket member so as to both align said monument within said interior and secure said monument in a predetermined position along at least one direction within said interior;
 - wherein said self-locating tie-down member includes a base portion and a top portion extending from said base portion, said base portion coupled to said monument and utilized for contacting said socket member, guiding said self-locating tie-down member into said socket member, and securing said monument in a predetermined position along at least one direction within said interior, said top portion extending from said base portion and utilized for further securing said self-locating tie-down member to said socket member in a direction

substantially parallel to a top surface of said floor; wherein said socket member and said self-locating tie-down member comprise a self-locating fastening assembly.

- [c16] 16. The aircraft of claim 15 wherein said monument has a bottom surface for sliding across said top surface of said floor and inserting said self-locating tie-down member into said socket member.
- [c17] 17. The aircraft of claim 15 wherein said self-locating tie-down member is disposed at an edge of said monument adjacent to said bottom surface of said monument.
- [c18] 18. The aircraft of claim 15 wherein said socket member defines a guiding chamber for contacting said top portion of said self-locating tie-down member and securing said self-locating tie-down member to said socket member.
- [c19] 19. The aircraft of claim 15 wherein said socket member defines a base chamber for receiving and contacting said base portion of said self-locating tie-down member so as to guide said self-locating tie-down member into said socket member and secure said monument in said predetermined position.
- [c20] 20. The aircraft of claim 15 wherein said top portion

comprises:

an offset tab extending from said base portion; and
a finger member extending from said offset tab and uti-
lized for securing said self-locating tie-down member to
said socket member.

[c21] 21.The aircraft of claim 15 wherein said base portion
comprises:

an inboard-extending tab sized for inserting into said
socket member, guiding said self-locating tie-down
member into said socket member, and securing said
monument in said predetermined position.

[c22] 22.The aircraft of claim 21 wherein said base portion
further comprises:

an outboard-extending tab for strengthening said top
portion.

[c23] 23.The aircraft of claim 22 further comprising:

a reinforcing rib coupled between said outboard-ex-
tending tab and said offset tab, said reinforcing rib for
strengthening said top portion.

[c24] 24.A self-locating fastening assembly for aligning and
securing a monument to a floor within an interior of an
airframe for an aircraft, comprising:

a self-locating tie-down member coupled to one of the

floor and the monument; and
a socket member coupled to the other of the floor and
the monument;
wherein said self-locating tie-down member includes a
base portion and a top portion extending from said base
portion, said base portion utilized for contacting said
socket member so as to guide said self-locating tie-
down member into said socket member and secure the
monument in a predetermined position along at least
one direction, said top portion utilized for securing the
self-locating tie-down member to the socket member.

- [c25] 25. The self-locating fastening assembly of claim 24
wherein said socket member defines a guiding chamber
for contacting said top portion of said self-locating tie-
down member and securing said self-locating tie-down
member to said socket member.
- [c26] 26. The self-locating fastening assembly of claim 24
wherein said socket member defines a base chamber for
receiving and contacting said base portion of said self-
locating tie-down member so as to guide said self-
locating tie-down member into said socket member and
secure the monument in said predetermined position.
- [c27] 27. The self-locating fastening assembly of claim 24
wherein said base chamber has a tapered opening for

aligning a misaligned self-locating tie-down member and allowing said self-locating tie-down member to fully engage said socket member.

- [c28] 28. The self-locating fastening assembly of claim 24 wherein said top portion comprises:
an offset tab extending from said base portion; and
a finger member extending from said offset tab and utilized for securing said self-locating tie-down member to said socket member.
- [c29] 29. The self-locating fastening assembly of claim 28 wherein said finger member has a conical shape with a rounded tip.
- [c30] 30. The self-locating fastening assembly of claim 28 wherein said base portion comprises:
an inboard-extending tab sized for inserting into said socket member, guiding said self-locating tie-down member into said socket member, and securing the monument in said predetermined position.
- [c31] 31. The self-locating fastening assembly of claim 30 wherein said base portion further comprises:
an outboard-extending tab for strengthening said top portion.
- [c32] 32. The self-locating fastening assembly of claim 31 fur-

ther comprising:

a reinforcing rib coupled between said outboard-extending tab and said offset tab, said reinforcing rib for strengthening said top portion.

- [c33] 33. The self-locating fastening assembly of claim 24 in which the socket member is manufactured by a process selected from the group consisting of a steelmaking process, a rolling process, a forging process, an extrusion process, a drawing process, a casting process, and a welding process.
- [c34] 34. The self-locating fastening assembly of claim 24 in which the self-locating tie-down member is manufactured by a process selected from the group consisting of a steelmaking process, a rolling process, a forging process, an extrusion process, a drawing process, a casting process, and a welding process.
- [c35] 35. A method for securing a monument to a floor of an airframe within an interior of an aircraft, comprising:
 - placing the monument on the floor of the airframe;
 - moving the monument in an outboard direction across a top surface of the floor;
 - inserting a self-locating tie-down member coupled to the floor into a socket member coupled to the monument;

aligning the monument in a predetermined position; and securing the monument to the floor in said predetermined position.

[c36] 36. The method of claim 35 wherein inserting said self-locating tie-down member into said socket member comprises:

inserting a top portion of said self-locating tie-down member into a top chamber of said socket member; and inserting a base portion of said self-locating tie-down member into a base chamber of said socket member.

[c37] 37. The method of claim 36 wherein inserting said top portion into said top chamber comprises:

inserting a finger member of said top portion into said top chamber.

[c38] 38. The method of claim 36 wherein inserting said base portion into said base chamber comprises:

inserting an inboard-extending tab of said base portion into said base chamber.

[c39] 39. The method of claim 36 wherein moving the monument in an outboard direction across a top surface of the floor comprises:

moving the monument along at least one guide line marked on the floor.

[c40] 40. The method of claim 36 further comprising:
measuring a gap between the monument and a sidewall;
determining whether the monument requires realign-
ment; and
realigning the monument when the monument requires
re-alignment.